

## 9.Brake System

This chapter covers the location and servicing of the front brake components for the KYMCO MXU 700i and MXU 500i models.

<b>1.Brake Discs .....</b>	<b>9-3</b>
<b>2.Brake Pedal .....</b>	<b>9-10</b>
<b>3.Front Brake Calipers .....</b>	<b>9-30</b>
<b>4.Rear Brake Calipers .....</b>	<b>9-43</b>
<b>5.Master Cylinders .....</b>	<b>9-67</b>

# TROUBLESHOOTING

## Loose brake lever

- Air in hydraulic brake system
- Brake fluid level too low
- Hydraulic brake system leakage

## Tight brake lever

- Seized piston
- Clogged hydraulic brake system
- Smooth or worn brake pad

## **Poor brake performance**

- Air in brake system
- Deteriorated brake fluid
- Contaminated brake pads and brake disk
- Worn brake pads
- Worn brake master cylinder piston oil seal
- Clogged brake fluid line
- Deformed brake disk
- Unevenly worn brake pad

## **Brake noise**

- Contaminated brake pad surface
- Excessive brake disk run out
- Incorrectly installed caliper
- Brake disk or wheel not aligned

### Hard braking

- Seized hydraulic brake system
- Seized piston

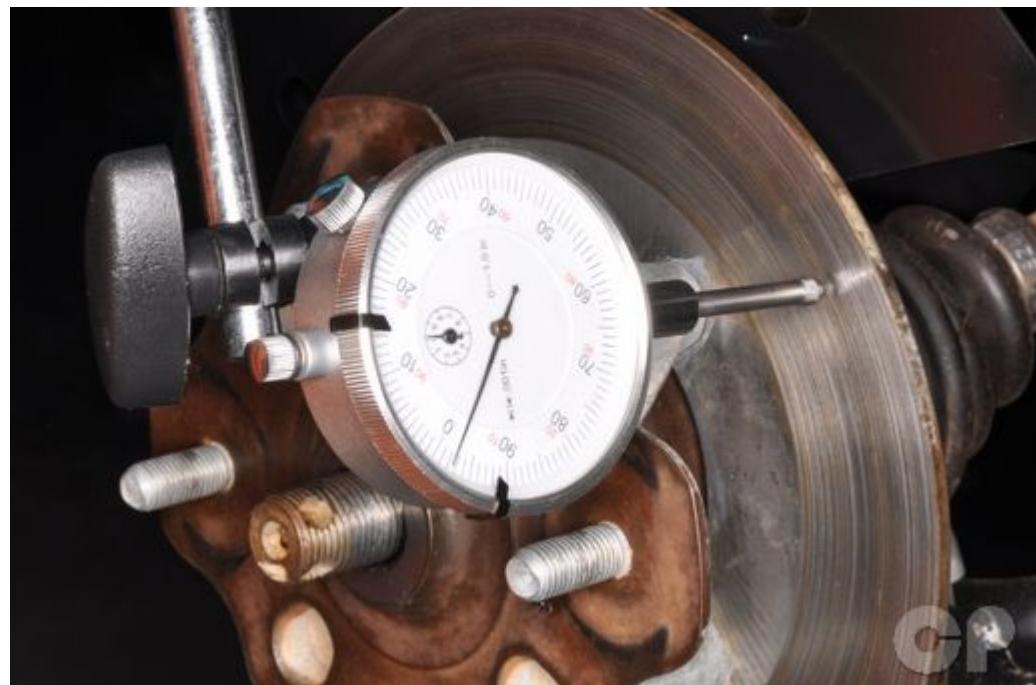
## Brake Discs

**SAFETY FIRST:** Protective gloves and eyewear are recommended at this point.

## Inspection

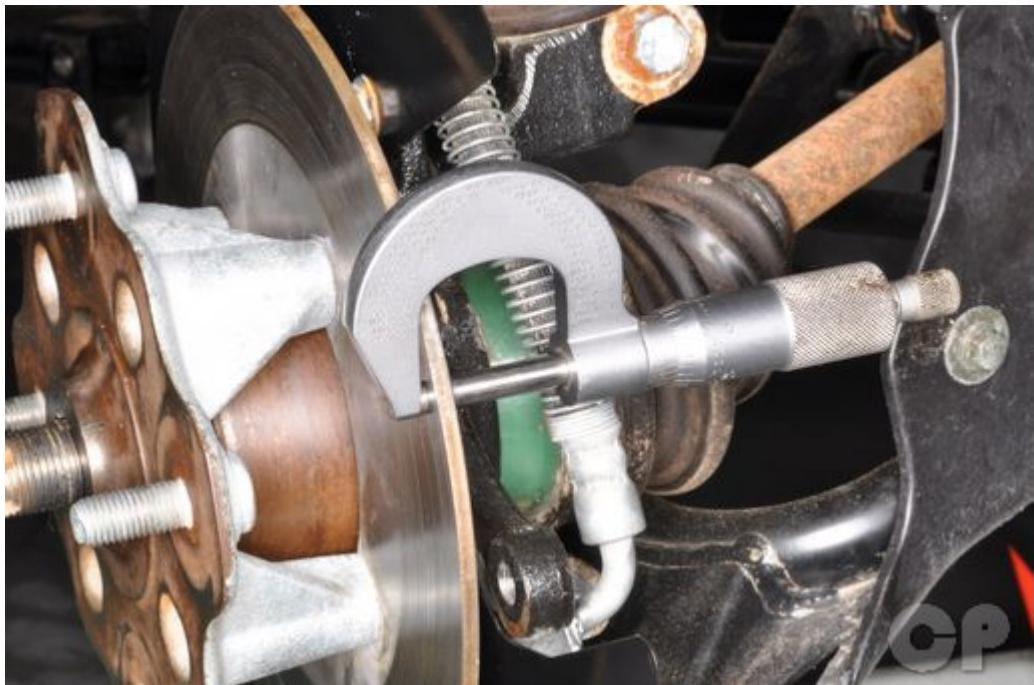
Remove the wheels. See the [Wheels and Wheel Hubs](#) topic for more information.

Check the brake discs for damage or excessive wear.



Using a dial gauge and stand measure the disc brake runout. Replace the front discs as a set if any are out of the service limit.

Item	Service Limit
Brake disc runout	0.30 mm (0.012 in)



Measure the brake disc thickness with a micrometer. Replace the rotor if it is below the service limit.

Item	Standard mm (in)	Service Limit
Brake disk thickness	FR: 4.0 (0.156) RR: 5.0 (0.195)	FR: 3 (0.12) RR: 4 (0.156)

## Removal

### Front



To remove the brake disc take out the four disc brake bolts with a Torx socket wrench. Separate the disc brake from the wheel hub.

## Rear



Remove the rear final drive. See the [Rear Final Drive Gear](#) topic for more information.





Remove the five rear brake disc bolts with a 6 mm Allen socket.



Remove the rear brake disc from the brake disc holder.

# Installation

## Front



Install the disc brake onto the wheel hub. Tighten the four bolts to specification with a Torx socket.

Item	Thread dia. (mm)	Torque Kgf-m (N-m, ft-lb)
Front brake disc and front hub	6	2.0 (20, 14)

Install the front wheels. See the [Wheels and Wheel Hubs](#) topic for more information.

Check the function of the brakes before riding.

## Rear



Fit the rear brake disc into place. Do not contaminate it with oil or grease.





Install the five rear brake disc mounting bolts and tighten them to specification with a 6 mm Allen socket.

Item	Thread dia. (mm)	Torque
		Kgf-m (N-m, ft-lb)
Rear brake disc and rear hub	8	3.5 (35, 25)

Install the rear final drive gear case. See the [Rear Final Drive Gear](#) topic for more information.

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## Brake Pedal and Master Cylinder

**SAFETY FIRST:** Protective gloves and eyewear are recommended at this point.

NOTE: Brake fluid is a corrosive chemical and can damage paints and some plastics. Avoid contact with skin.

There are two rear brake calipers. The caliper that mounts to the top of the final drive gear is connected to the pedal activated master cylinder. The caliper that mounts to the side of the final drive gear is connected to the left handlebar master cylinder.

## Removal

Remove the right mudguard. See the [Mudguards and Footrests](#) topic for more information.



The brake pedal is mounted to a pivot on the right side of the frame.



Trace the wire up from the rear brake light switch and unplug the connector.



Drain the brake fluid from the brake pedal master cylinder system if the master cylinder is to be disconnected from the brake hose. See the [Brake Fluid](#) topic for more information.



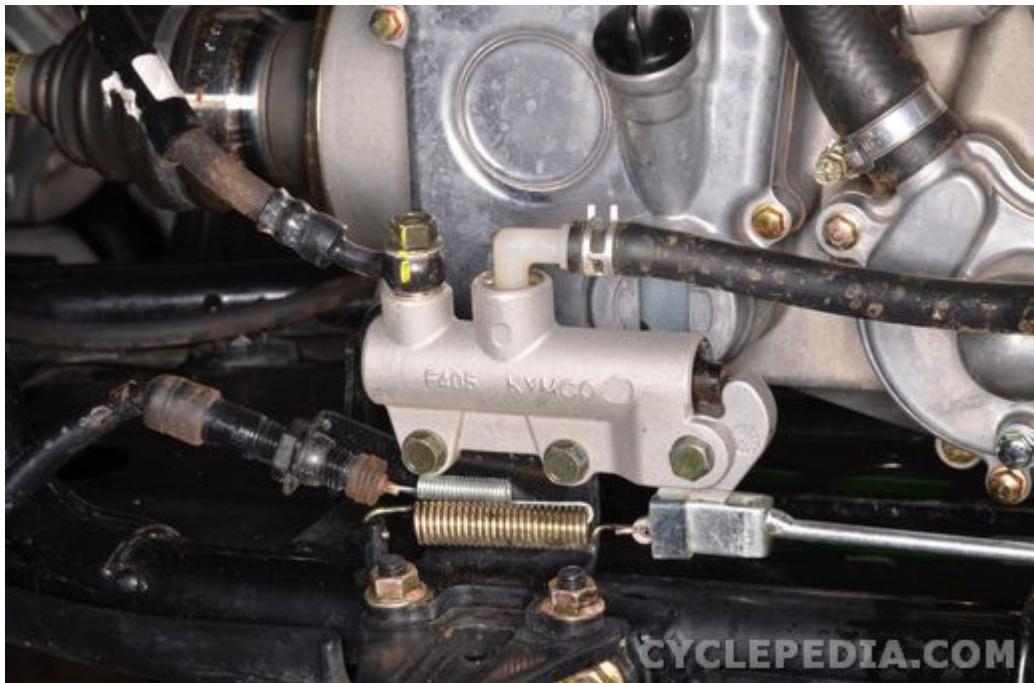
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Remove the master cylinder reservoir mounting bolt with a #3 Phillips screwdriver.



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Remove the two brake pedal pivot mounting bolts.

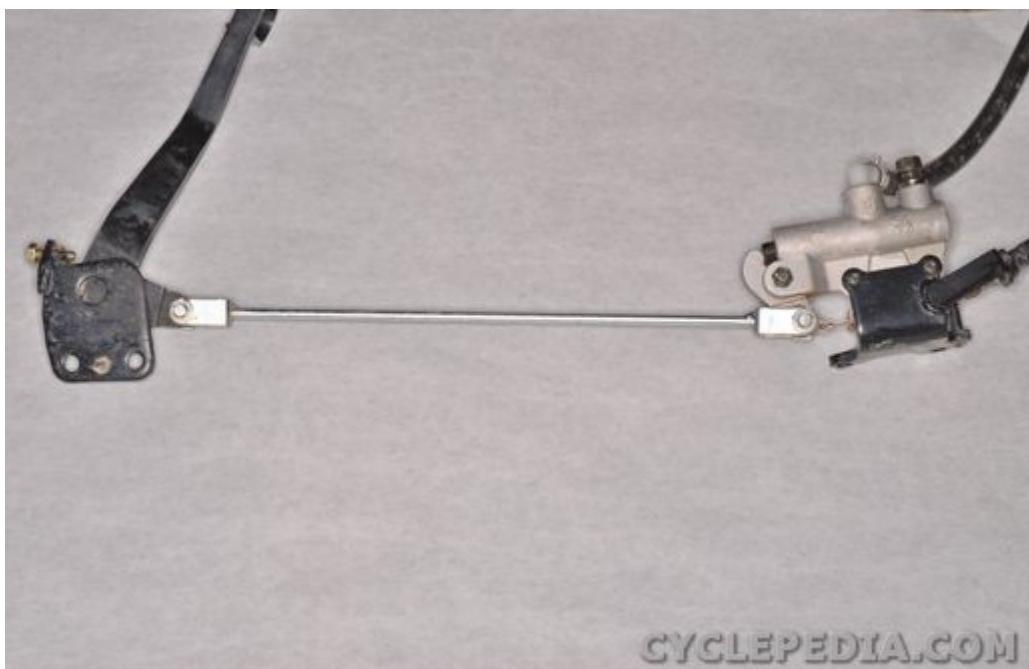


Loosen the brake hose banjo bolt with a 12 mm socket. Remove the banjo bolt and the two sealing washers. Remove the two master cylinder mounting bracket nuts with a 12 mm socket.



Remove the pedal and master cylinder assembly from the frame.

# Disassembly



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Remove the two cotter pins, washers, and joints to remove the brake rod.



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Remove the master cylinder rod cotter pin, washer, and pivot pin. Separate the master cylinder rod from the brake pedal.



To remove the pedal from the bracket take out the cotter pin and remove the washer. Slide the pedal off of its pivot.



To remove the reservoir hose slide up the clamp and free the hose form the master cylinder. To free the master cylinder from the bracket remove the two mounting bolts with a 10 mm socket.



Use a spring puller to remove the pedal return spring and rear brake light switch spring.



To remove the master cylinder lever hold the bolt and loosen the nut. Remove the nut and bolt.



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Remove the lever from the master cylinder.



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Take care to keep track of the washers that sit on each side of the lever.



Remove the reservoir pipe snap ring with snap ring pliers. Lift out the reservoir pipe. Inspect the O-ring and replace it as needed.



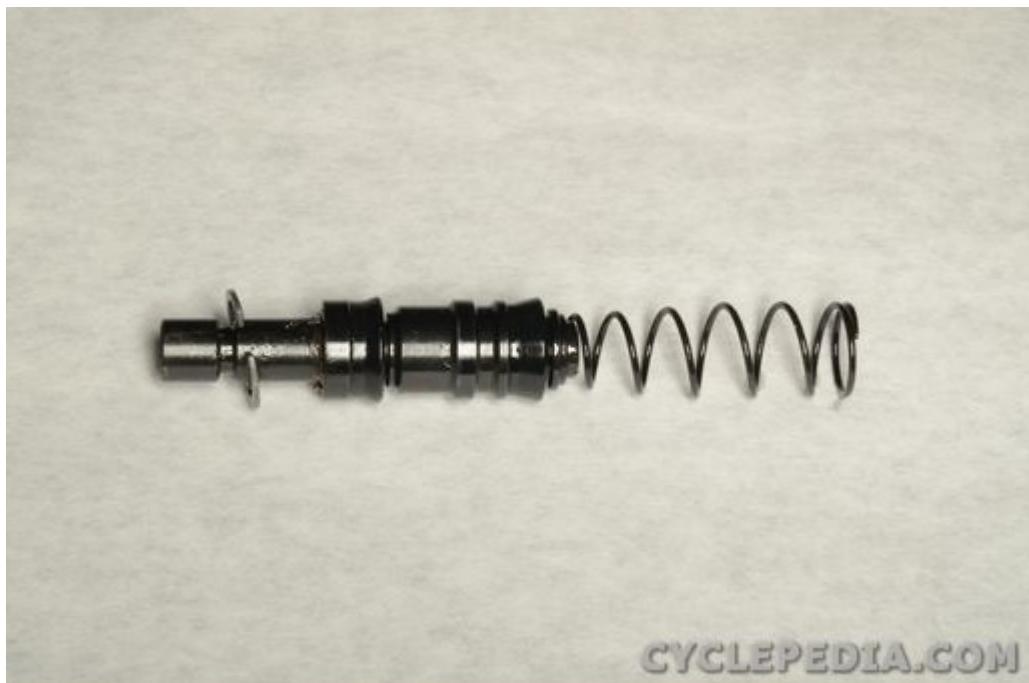
Remove the rubber cover from the master cylinder piston.



Remove the snap ring using a pair of internal snap ring pliers. Use a suitable tool to hold back the piston as it can spring out.



Remove the piston and spring from the master cylinder.



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Inspect the piston, seals, and master cylinder bore for wear and damage. Replace the master cylinder an assembly if the components are damaged.

## Assembly

Clean the master cylinder components with fresh brake fluid (DOT-4).



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Lubricate the piston and seals with fresh brake fluid. Insert the spring and piston into the master cylinder.



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Push in the piston and install the snap ring into its groove with snap ring pliers.



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Install the rubber cover over the piston.



Install the reservoir pipe with an O-ring in good condition. Install the snap ring into its groove with snap ring pliers.



Place washers on each side of the master cylinder lever.



Install the lever into the master cylinder as shown.



Apply a light coat of waterproof grease to the pivot bolt. Install the pivot bolt and nut and tighten them securely.



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Install the bracket to the master cylinder and tighten the two bolts securely. Use a spring puller to install the pedal return spring and rear brake light switch spring as shown.

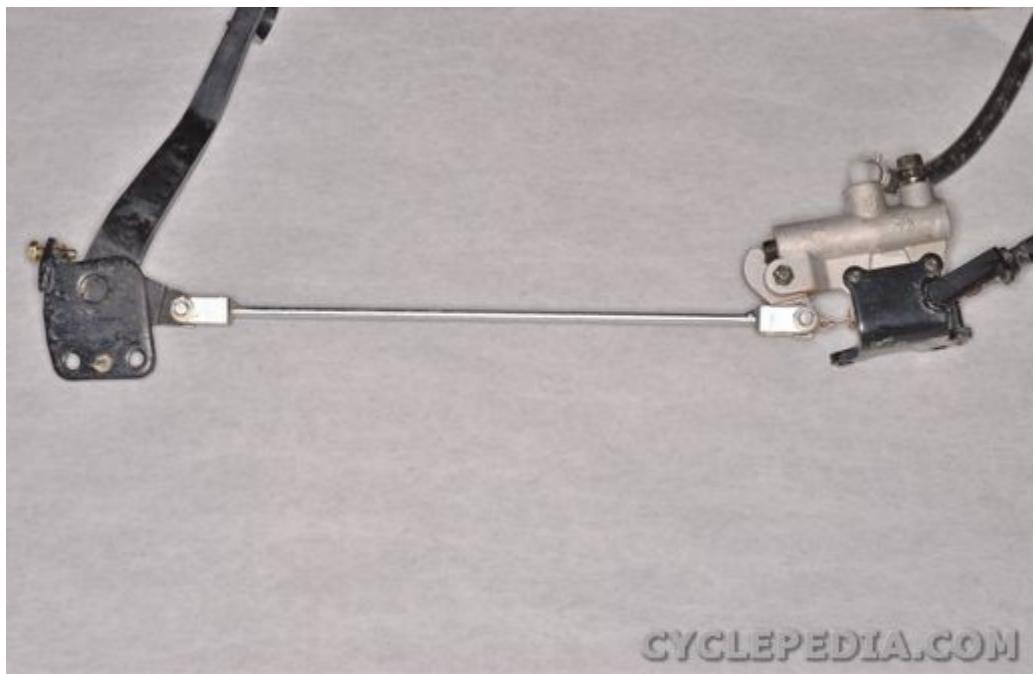


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Connect the reservoir hose to the pipe and secure it with the clamp.



Apply a light coat of waterproof grease to the pedal pivot. Fit the pedal onto the pivot. Install the washer and a new cotter pin. Bend the pin as shown to secure the pedal and washer.



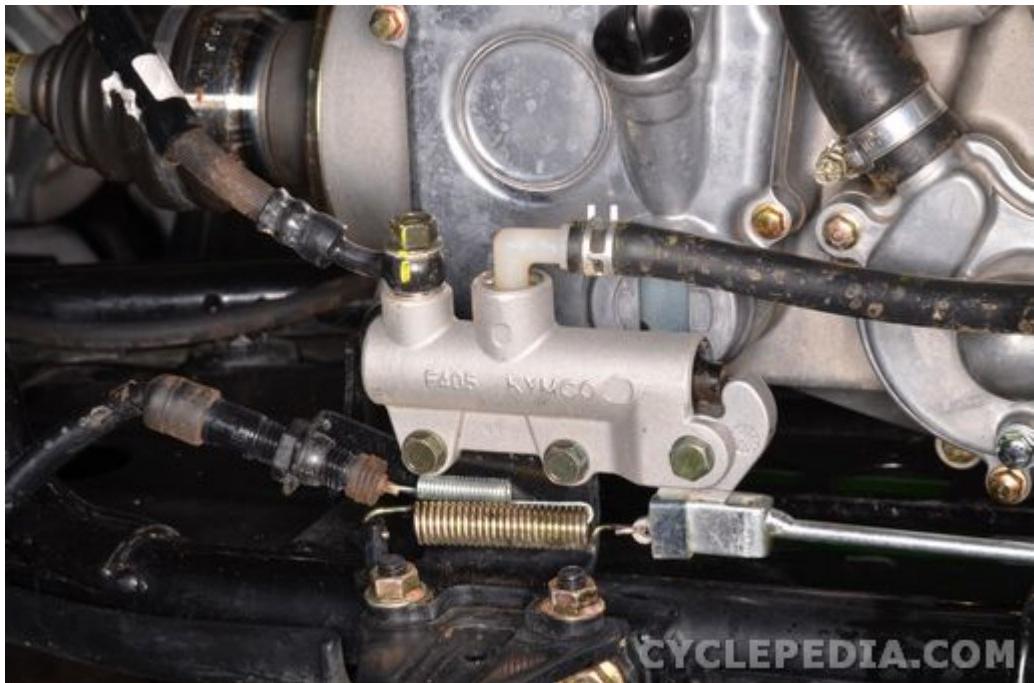


Connect the brake rod to the pedal and lever. Install the joints, washers, and new cotter pins. Bend the cotter pins to secure the rod.

## Installation



Fit the master cylinder and pedal into place on the right side of the frame.



Install the two master cylinder mounting bracket nuts with a 12 mm socket and tighten them securely. Connect the brake hose to the master cylinder. Use a new sealing washer to each side of the banjo bolt. Tighten the brake hose banjo bolt to specification with a 12 mm socket.

Item	Thread dia. (mm)	Torque Kgf-m (N-m, ft-lb)
Brake hose oil bolt	10	3.5 (35, 25)



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Install the two brake pedal pivot mounting bolts and tighten them securely.



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Fit the reservoir into place and install the mounting bolt. Tighten the bolt securely with a #3 Phillips screwdriver.



Plug in the rear brake light switch connector.

Fill the rear brake system with brake fluid and bleed out the air. See the [Brake Fluid](#) topic for more information.

Adjust the rear brake pedal and brake light switch. See the [Brake Fluid](#) topic for more information.

Install the right mudguard. See the [Mudguards and Footrests](#) topic for more information.

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## Front Brake Calipers

**SAFETY FIRST:** Protective gloves and eyewear are recommended at this point.

**Warning:** Brake fluid is very caustic and can damage paint, chrome and plastic. Wipe up any spills immediately.

There are three brake calipers, two for the front, and one with the left rear wheel hub.

## Removal

Remove the front wheels or left rear wheel as needed. See the [Wheels and Wheel Hubs](#) topic for more information.

Drain the brake fluid if the caliper is to be completely removed and disassembled. See the [Brake Fluid](#) topic for more information.

Note: If you are only replacing the brake pads it is not necessary to drain the brake fluid.



Remove the two brake caliper mounting bolts.



Remove the brake caliper from the knuckle and disc.

Note: Do not use the front brake while the caliper and brake pads are not installed on the vehicle.

# Brake Pad Replacement



Push the pads and bracket in towards the caliper piston. Remove the brake pads.



Discard the brake pads if the linings are below 1 mm or 0.039 in thick.

Install the brake pads. See the [Installation](#) section for more information.

# Disassembly



Loosen the brake hose banjo bolt with a 12 mm socket. Remove the banjo bolt and sealing washers. Place the end of the brake hose in a suitable container to collect any dripping brake fluid.



Remove the caliper bracket. Inspect the caliper bracket O-rings and replace them as needed.

NOTE: Always wear safety glasses when using compressed air and never point it directly at yourself or anyone else.



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Remove the pin boots from the caliper.



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Place a thick rag over caliper piston and use compressed air to move the piston out. Do not place your fingers over the caliper piston while removing it as serious injury could result.



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Remove the caliper piston by hand.



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Remove the dust seal from the caliper bore and discard.



Use a mechanics pick to remove the piston fluid seal from the caliper bore and discard.

# Inspection



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Check the brake caliper bore for any scratches, damage or excessive wear.  
Clean the brake caliper bore with DOT 4 brake fluid. Do not dry off with a rag.



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Check the piston for any scratches, damage or excessive wear. Clean the piston with DOT 4 brake fluid. Do not dry off with a rag.

# Assembly



Coat the new seals, piston, and piston bore with DOT 4 brake fluid.



Install a new piston fluid seal into the inner groove. Install a new dust seal into the outer groove in the caliper bore. Install the piston into the caliper bore closed end first. Push the piston all the way in.



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Install the pin boots into the caliper.



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Apply silicone grease to the caliper bracket pins. Install the caliper bracket.

# Installation



Install the brake pads.



Fit the brake caliper into place. Guide the brake disc between the pads.



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Install the two brake caliper mounting bolts and tighten them to specification.

ITEM	THREAD SIZE AND TYPE	TORQUE		
		kgf-m	Nm	ft-lb
CALIPER AND FR/RR KNUCKLE	M8 X 1.25	24-32	24-32	20

Connect the brake hose to the caliper if it was removed. Use a new sealing washer on each side of the hose fitting. Tighten the banjo bolt to specification.

ITEM	THREAD SIZE AND TYPE	TORQUE		
		kgf-m	Nm	ft-lb
FRONT/REAR CALIPER AND BRAKE HOSE END	M10 X 1.25	2.4-3.2	24-32	20

Install the wheels. See the [Wheels and Wheel Hubs](#) topic for more information.

Fill the master cylinder reservoir with brake fluid and bleed the brakes. See the [Brake Fluid](#) topic for more information.

Make sure the brakes work properly before riding.

# Burnishing New Brake Pads

**Warning:** Failure to properly burnish the brake pads could lead to premature brake pad wear or brake loss. Brake loss can result in severe injury.

Brake pads (both main and auxiliary) must be burnished to achieve full braking effectiveness. Braking distance will be extended until brake pads are properly burnished. To properly burnish the brake pads, use the following procedure.

1. Choose an area large enough to safely accelerate the ATV to 30 mph and to brake to a stop.
  2. Accelerate to 30 mph; then compress brake lever or apply the auxiliary brake to decelerate to 0-5 mph.
  3. Repeat procedure on each brake system five times.
  4. Adjust the auxiliary' brake (if necessary).
  5. Verify that the brake light illuminates when the hand lever is compressed or the brake pedal is depressed.
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## Rear Brake Calipers

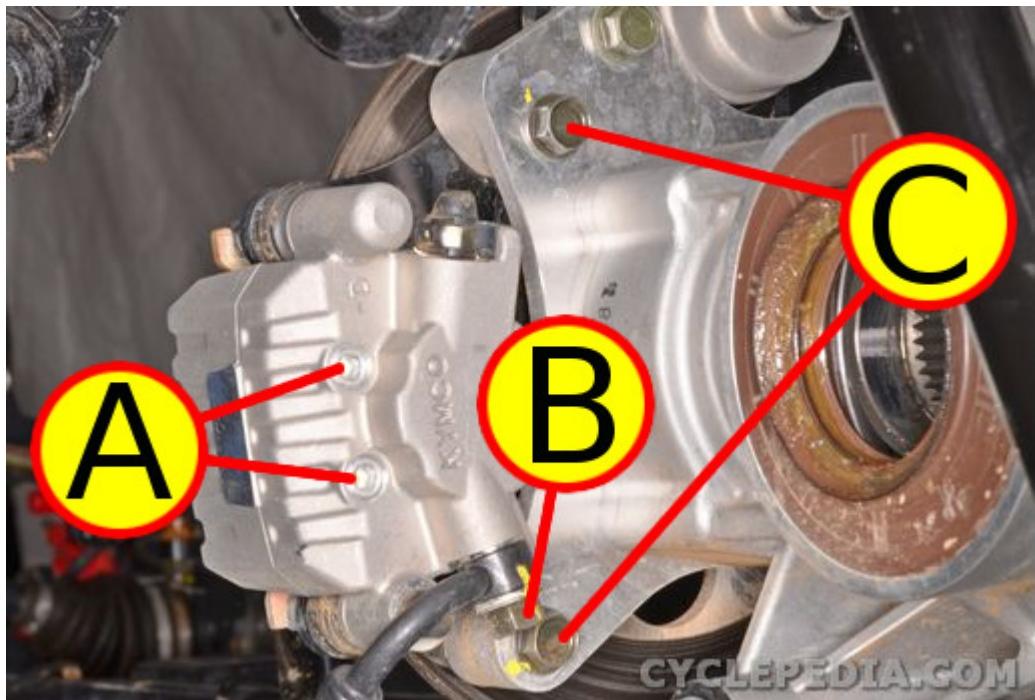
**SAFETY FIRST: Protective gloves and eyewear are recommended at this point.**

NOTE: Brake fluid is a corrosive chemical and can damage paints and some plastics. Avoid contact with skin.

There are two rear brake calipers. The caliper that mounts to the top of the final drive gear is connected to the pedal activated master cylinder. The caliper that mounts to the side of the final drive gear is connected to the left handlebar master cylinder.

# Side Caliper

## Removal



If the brake pads are going to be removed go ahead and loosen the pad pins (A) with a 5 mm Allen. If the brake caliper is to be disassembled drain the brake fluid ([Brake Fluid](#)), and remove the banjo bolt (B) with a 12 mm socket. Remove the two brake caliper mounting bolts (C) with a 12 mm socket.



Remove the side brake caliper from the final drive gear.

## Brake Pad Replacement



Remove the brake pad pins with a 5 mm Allen.



Push in the brake pads and compress the piston. Remove the brake pads.



Replace the brake pads if the wear indicators are worn away.

## Disassembly



Remove the brake hose banjo bolt with a 12 mm socket. Remove the banjo bolt and sealing washers.



Remove the caliper bracket.



Remove the rubber boots. Replace if damaged.



Remove the brake pad spring.

NOTE: Always wear safety glasses when using compressed air and never point it directly at yourself or anyone else.



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Place a thick rag over caliper piston and use compressed air to move the piston out. Do not place your fingers over the caliper piston while removing it as serious injury could result.



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Remove the caliper piston by hand.



Remove the dust seal from the outer caliper bore and discard.



Use a mechanics pick to remove the piston seal from the inner caliper bore and discard.

## Inspection



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Check the brake caliper bore for any scratches, damage or excessive wear.  
Clean the brake caliper bore with DOT 4 brake fluid.



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Check the piston for any scratches, damage or excessive wear. Clean the piston with DOT 4 brake fluid.



Check the brake caliper holder for damage.

# Assembly

Coat the new seals, piston, and piston bore with DOT 4 brake fluid.



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Install a new piston seal into the inner caliper bore groove. Install the dust seal into the outer groove.



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Install the piston into the caliper so that the open end faces out. Push the piston all the way in.



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Install the brake pad spring.



Install the rubber boots.



Apply silicone grease to the caliper bracket pins. Install the caliper bracket.

## Brake Pad Installation



Install the inner brake pad and then the outer brake pad.

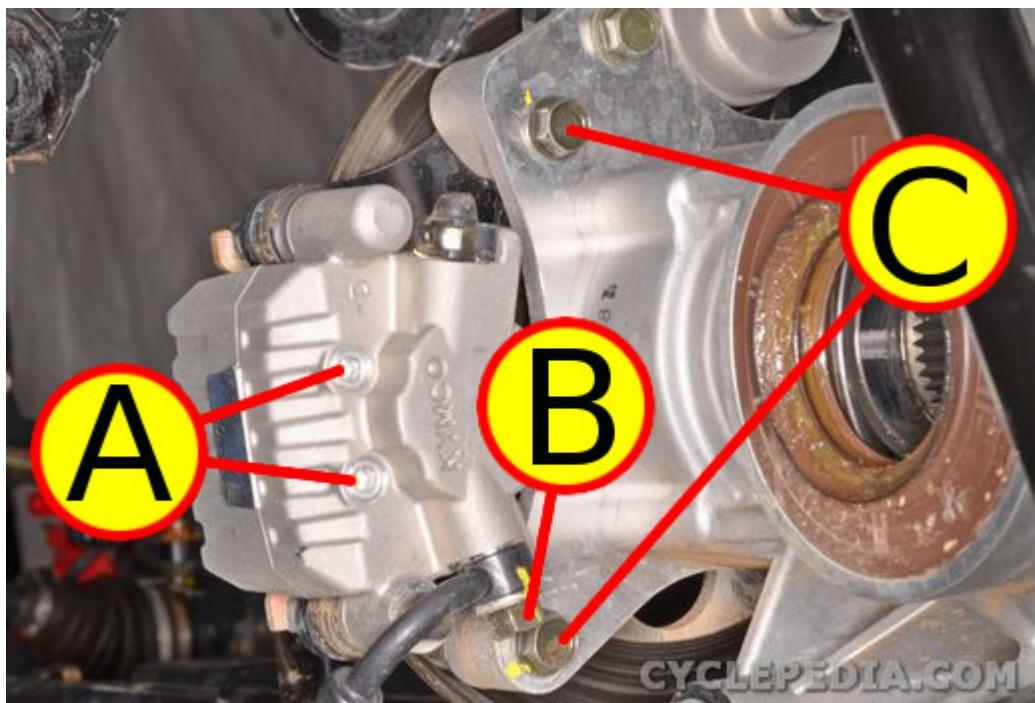


Install the two the brake pad mounting pins into the caliper and through the brake pads.

## Installation



Fit the brake caliper into place on the final drive gear case and guide the disc between the pads.

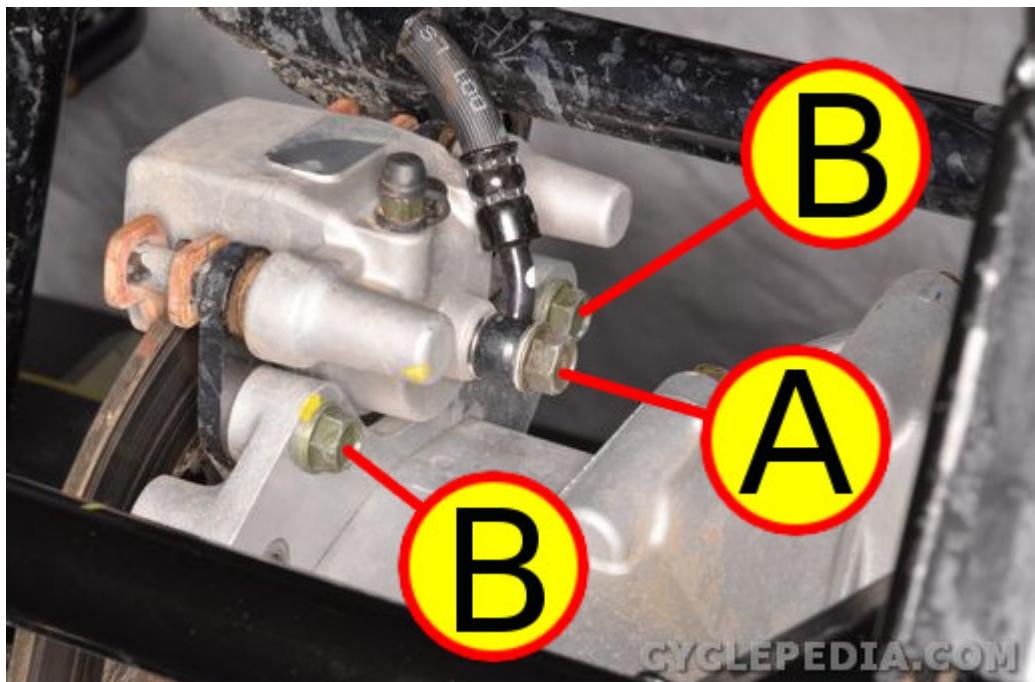


Install the two brake calipers mounting bolts (C) and tighten them to specification with a 12 mm socket. Tighten the pad pins (A) to specification with a 5 mm Allen wrench. Install new sealing washers and tighten the brake hose banjo bolt (B) to specification with a 12 mm socket.

Item	Thread dia. (mm)	Torque Kgf-m (N-m, ft-lb)
Rear disc holder and gear box	10	4.5 (45, 34)
Brake pad mounting pin	-	1.8 (18, 13)
Brake hose oil bolt	10	3.5 (35, 25)

# Top Caliper

## Removal



If the brake caliper is to be disassembled drain the brake fluid ([Brake Fluid](#)), and remove the banjo bolt (A) with a 12 mm socket. Remove the two brake caliper mounting bolts (B) with a 12 mm socket.

## Brake Pad Replacement



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Push in the brake pads and compress the piston.



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Remove the brake pads.



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Discard the brake pads if the linings are below 1 mm or 0.039 in thick.

## Disassembly



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Remove the caliper bracket. Inspect the caliper bracket O-rings and replace them as needed.



Remove the rubber boots. Replace if damaged.

NOTE: Always wear safety glasses when using compressed air and never point it directly at yourself or anyone else.



Place a thick rag over caliper piston and use compressed air to move the piston out. Do not place your fingers over the caliper piston while removing it as serious injury could result.



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Remove the caliper piston by hand.



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Remove the dust seal from the caliper bore and discard.



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Use a mechanics pick to remove the piston fluid seal from the caliper bore and discard.

## Inspection



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Check the brake caliper bore for any scratches, damage or excessive wear.  
Clean the brake caliper bore with DOT 4 brake fluid.



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Check the piston for any scratches, damage or excessive wear. Clean the piston with DOT 4 brake fluid.

## Assembly



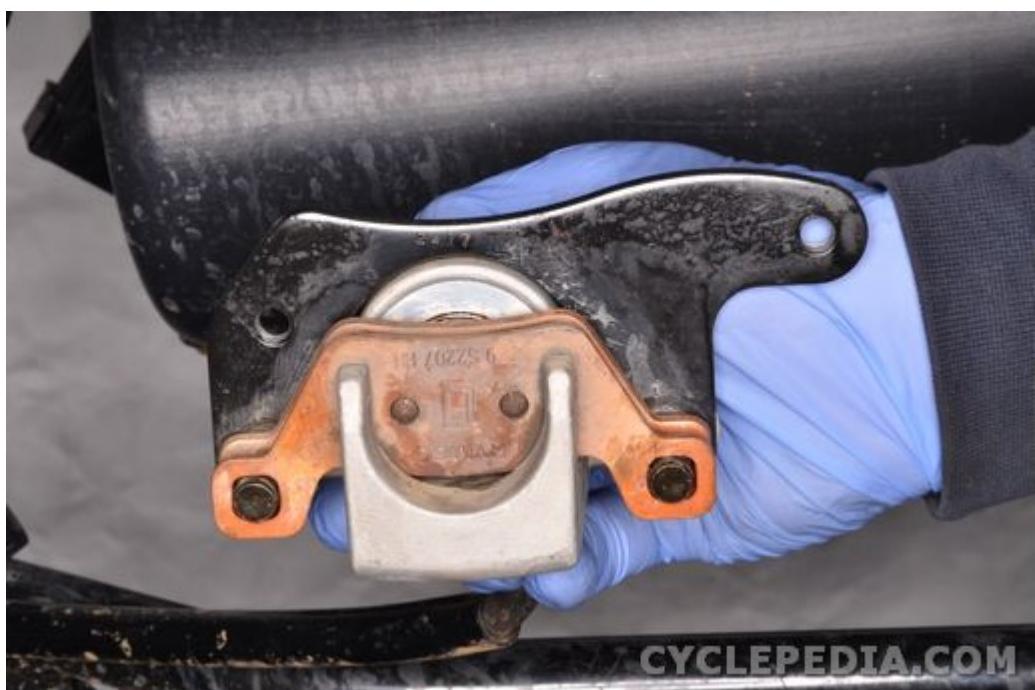
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Coat the new seals, piston, and piston bore with DOT 4 brake fluid. Install a new piston fluid seal into the inner groove. Install a new dust seal into the caliper. Install the piston into the caliper bore with the open end facing out.



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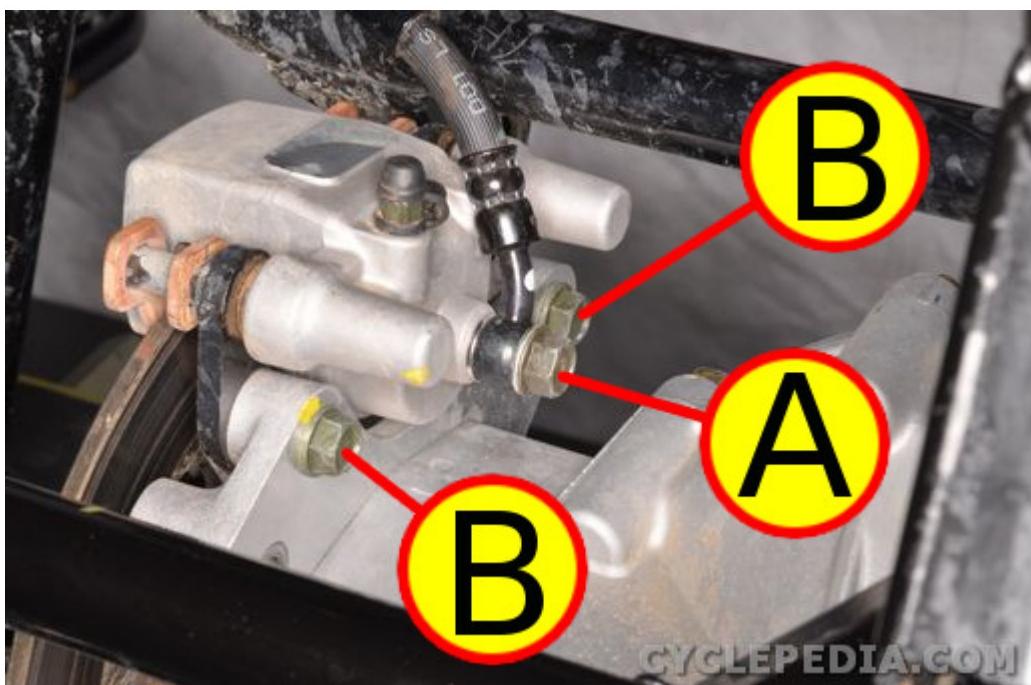
Apply silicone grease to the caliper bracket pins. Install the caliper bracket.



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Install the brake pads.



Fit the brake caliper into place. Guide the brake disc between the pads. Install the two brake calipers mounting bolts (B) and tighten them to specification with a 12 mm socket. Install new sealing washers and tighten the brake hose banjo bolt (A) to specification with a 12 mm socket.

Item	Thread dia. (mm)	Torque
		Kgf-m (N-m, ft-lb)
Rear disc holder and gear box	10	4.5 (45, 34)
Brake hose oil bolt	10	3.5 (35, 25)

Fill the master cylinder reservoir with brake fluid and bleed the brakes. See the [Brake Fluid](#) topic for more information.

Make sure the brakes work properly before riding.

## Master Cylinders

**SAFETY FIRST:** Protective gloves and eyewear are recommended at this point.

**Warning:** Brake fluid is very caustic and can damage paint, chrome and plastic. Wipe up any spills immediately.

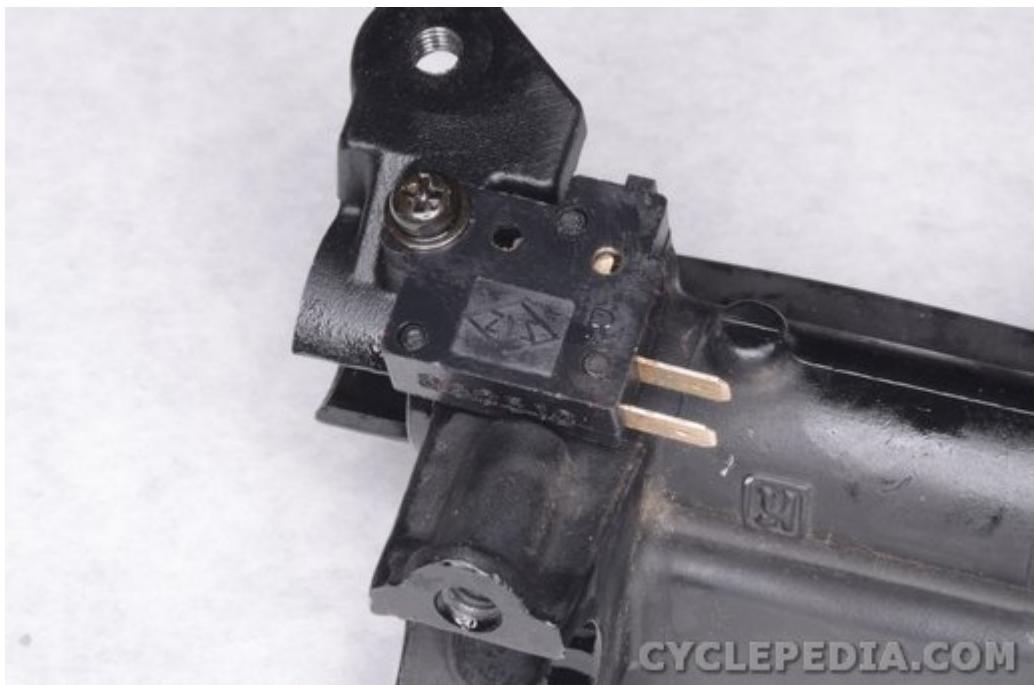
Note: The master cylinders can not be repaired. Replace the assembly with a new one if needed.

## Removal

### Brake Light Switches



Disconnect the rear brake light switch connectors from the switch on the left master cylinder.



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To remove the left master cylinder brake light switch take out the screw with a #2 Phillips screwdriver.



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The right side (front brake) master cylinder has a different style brake switch.



Compress the tabs and remove the switch from the master cylinder.

## Reservoir Caps



Remove the reservoir cap screws with a #2 Phillips screwdriver.



Lift off the reservoir cap.



Remove the rubber diaphragm.

# Master Cylinders



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If the brake hoses are to be disconnected drain the brake fluid. See the [Brake Fluid](#) topic for more information. Remove the brake hose banjo bolt and the two sealing washers.



Loosen the brake master cylinder perch bolts with an 8 mm socket. Free the perch from the handlebar and remove the master cylinder.

## Brake Levers



Hold the pivot bolt with a 10 mm socket and loosen the pivot nut with a 10 mm socket. Remove the nut and bolt.



Free the brake lever from the master cylinder.

## Installation

Note: Do not splash brake fluid onto any rubber, plastic and coated parts. When working with brake fluid, use shop towels to cover these parts.

## Brake Levers

Apply a light coat of waterproof grease to the pivot section of the brake lever pivot bolts.



Fit the brake lever into place.



Insert the pivot bolt from above and snug it down. Thread on the nut and tighten it securely while holding the bolt from turning. Make sure the lever moves smoothly.

# Master Cylinders



Fit the master cylinder perch into place on the handlebar. Install the two mounting bolts and tighten them to specification with an 8 mm socket.

Item	Thread dia. (mm)	Torque Kgf-m (N-m, ft-lb)
Master cylinder holder bolt	6	1.2 (12, 7)
Secondary master cylinder holder and	6	1.2 (12, 7)



Connect the brake hose to the master cylinder. Use new sealing washers to each side of the hose fittings. Tighten the banjo bolt to specification.

Item	Thread dia. (mm)	Torque Kgf-m (N-m, ft-lb)
Master cylinder holder bolt	6	1.2 (12, 7)
Secondary master cylinder holder and	6	1.2 (12, 7)

When all the brake hoses are connected, fill the master cylinders with fresh brake fluid from a tightly sealed container and bleed the brakes. See the [Brake Fluid](#) topic for more information.

Make sure the brakes work properly before riding.

## Reservoir Caps



Install the rubber diaphragm (compressed) and the cap.



Install the reservoir cap screws and tighten them to specification with a #2 Phillips screwdriver.

Item	Thread dia. (mm)	Torque Kgf-m (N-m, ft-lb)
Master cylinder cap screw	4	0.15 (1.5, 1.1)

Make sure the brakes work properly before riding.

## Brake Light Switches



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Install the left master cylinder brake light switch. Tighten the screw securely with a #2 Phillips screwdriver.



Plug in the rear brake light switch connectors to the switch on the left master cylinder.



Insert the right master cylinder brake light switch and be sure it locks into place.

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